WHAT IS CLAIMED IS:

1. A process for manufacturing a high-strength, high-ductility alloy carbon steel, said process comprising:

(a) forming a carbon steel alloy having a microstructure comprising laths of martensite alternating with films of retained austenite, and

(b) cold working said carbon steel alloy to a reduction sufficient to achieve a tensile strength of at least about 150 ksi.

2. A process in accordance with claim **1** in which step (b) comprises cold working said carbon steel alloy to a reduction sufficient to achieve a tensile strength of from about 150 ksi to about 500 ksi.

3. A process in accordance with claim **1** in which step (b) comprises cold working said carbon steel alloy to a cross-sectional area reduction of at least about 20% per pass.

4. A process in accordance with claim **1** in which step (b) comprises cold working said steel alloy to a cross-sectional area reduction of at least about 25% per pass

5. A process in accordance with claim **1** in which step (b) comprises cold working said carbon steel alloy to a cross-sectional area reduction of from about 25% to about 50% per pass.

6. A process in accordance with claim **1** in which step (b) comprises cold working said carbon steel alloy in a series of passes without heat treatment between passes.

7. A process in accordance with claim **1** in which step (b) is performed at a temperature of about 100°C or below.

8. A process in accordance with claim **1** in which step (b) is performed within approximately 25°C of ambient temperature.

9. A process in accordance with claim **1** in which said carbon steel alloy is in the form of a rod or wire, and step (b) comprises drawing said carbon steel alloy through a die.

10. A process in accordance with claim **1** in which said carbon steel alloy is in the form of a sheet, and step (b) comprises rolling said carbon steel alloy.

11. A process in accordance with claim **1** in which step (a) comprises

(i) forming a carbon steel alloy composition having a martensite start temperature of at least about 300°C,

(ii) heating said carbon steel alloy composition to a temperature sufficiently high to cause austenitization thereof, to produce a homogeneous austenite phase with all alloying elements in solution, and

(iii) cooling said homogeneous austenite phase through said martensite transition range at a cooling rate sufficiently fast to achieve said microstructure substantially avoiding carbide formation at interfaces between said laths of martensite and said films of retained austenite.

12. A process in accordance with claim **11** in which said carbon steel alloy composition having a martensite start temperature of at least about 350°C.

13. A process in accordance with claim **11** in which said retained austenite films are of a uniform orientation.

14. A process in accordance with claim **11** in which said carbon steel alloy composition consists of iron and alloying elements comprising from about 0.04% to about 0.12% carbon, from 0% to about 11% chromium, from 0% to about 2.0% manganese, and from 0% to about 2.0% silicon, all by weight.

15. A process in accordance with claim **11** in which said temperature of step (ii) is from about 800°C to about 1150°C.

16. A process in accordance with claim **1** in which step (a) comprises

(i) forming a carbon steel alloy composition having a martensite start temperature of at least about 300°C,

(ii) heating said carbon steel alloy composition to a temperature sufficiently high to cause austenitization thereof, to produce a homogeneous austenite phase with all alloying elements in solution,

(iii) cooling said homogeneous austenite phase to transform a portion of said austenite phase to ferrite crystals, thereby forming a two-phase microstructure comprising ferrite crystals fused with austenite crystals, and

(iv) cooling said two-phase microstructure through said martensite transition range under conditions causing conversion of said austenite crystals to a microstructure containing laths of martensite alternating with films of retained austenite.

17. A process in accordance with claim **16** in which step (iii) comprises cooling said homogeneous austenite phase to a temperature of from about 800°C to about 1,000°C.

18. A process in accordance with claim **16** in which step (ii) comprises heating said carbon steel alloy composition to a temperature of from about 1,050°C to about 1,170°C, and step (iii) comprises cooling said homogeneous austenite phase to a temperature of from about 800°C to about 1,000°C.

19. A process in accordance with claim **16** in which said carbon steel alloy composition consists of iron and alloying elements comprising from about 0.02% to about 0.14% carbon, from 0% to about 3.0% silicon, from 0% to about 1.5% manganese, and from 0% to about 1.5% aluminum, all by weight.